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The Center for Education and Research in Information Assurance and Security

The Effects of Online Anxiety on Cyber-Hygiene

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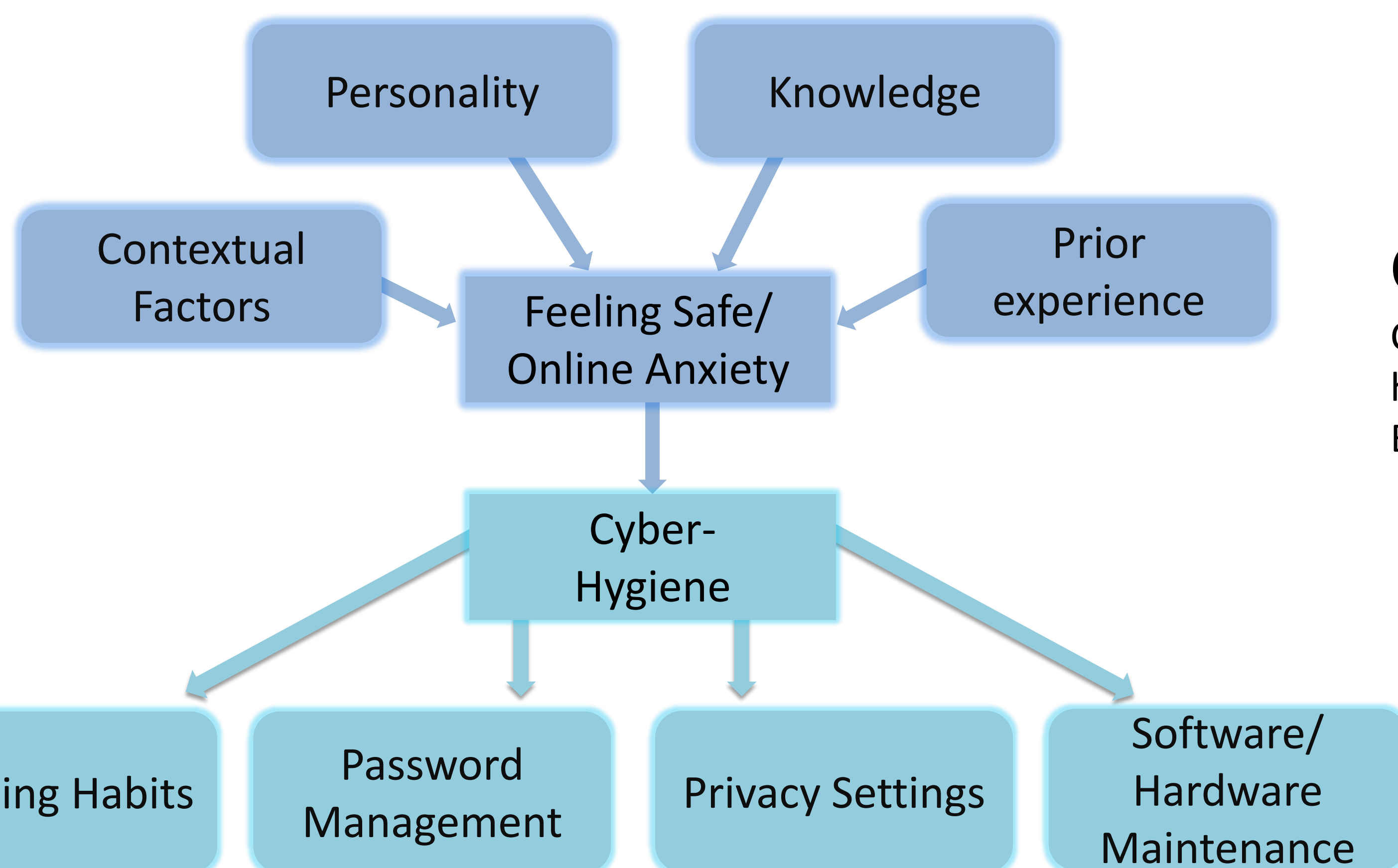
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The Problem

There is a lack of basic cybersecurity knowledge among the majority of the population. The majority of cybersecurity education is not tailored to fundamental and novice users.

Research Questions

i. What factors affect the adoption of cyber-secure attitudes and behaviors
ii. What level of cyber-hygiene do people regularly engage in?
iii. Do positive/negative experiences online have a mediating effect on cyber-hygiene?

Method

A survey was developed to measure each of the constructs identified. Data were collected using Amazon Mturk (N=300)

Expert (advanced cybersecurity practitioners) 2%
Proficient (degree in cybersecurity) 8%
Competent (some cybersecurity training) 16%
Fundamental (advanced computer user) 20% of population
Novice (average computer user) 54% of population

Target population

Cyber-Hygiene

Cyber hygiene refers to the practices that users should take to maintain the health and security of their computers and other devices.
Best practices include:

- Regular software updates
- Regular hardware updates
- Back up all data
- Password management (strong passwords/pass phrases, unique to each account, changed regularly)
- Implement two-factor authentication
- Install anti-malware/anti-virus
- Keep an inventory of hardware and software
- Implement access control
- Be vigilant for phishing emails and unsecured websites

Online Anxiety

Computer anxiety is the fear of using a computer. It has been found to be fairly prevalent, occurring in 30-40% of people (Buche, Davis & Vician, 2007). It has been found to affect individual's willingness to engage with and learn about computers. Online anxiety is believed to be related and the result of:
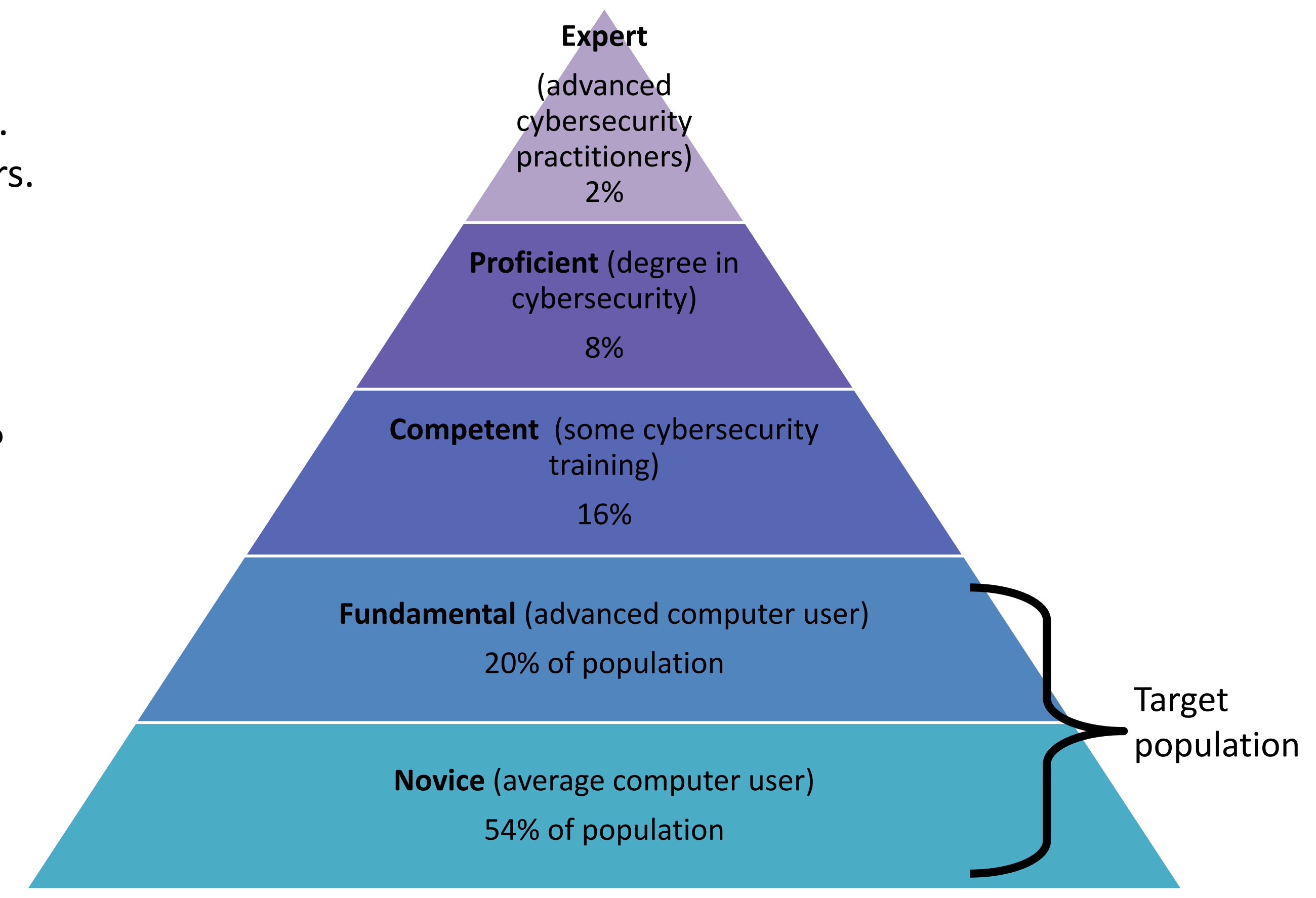
- Lack of knowledge
- Fear of making a mistake
- Lack of self-efficacy

Results

1. 85% of the population experienced above average anxiety
2. 89% engage in basic cyber-hygiene
3. Only 26% engage in more rigorous cyber-hygiene
4. There is a significant difference by ethnicity in who engages in cyber-hygiene [$F(6,289)$ = 2.703, p = 0.01]
5. There was a correlation between feeling safe online and cyber-hygiene [r= 0.268, n = 284, p <0.001] suggesting that people who experienced less anxiety online had better cyber-hygiene.
6. There was a negative correlation between risk taking behavior and good cyber-hygiene [r=-.31, n = 294, p <.001] suggesting that people who take higher risks are more likely to have poor cyber-hygiene.

References

Buche, Mari & Davis, Larry & Vician, Chelley. (2007). A Longitudinal Investigation of the Effects of Computer Anxiety on Performance in a Computing-Intensive Environment. Journal of Information Systems Education. 18.

Basic Cyber-hygiene behavior

- I often use private browsing mode or a virtual private network to go online
- I have firewalls installed on my computer
- I regularly connect to public Wi-Fi
- I regularly check for spyware and malware
- I have an anti-virus program installed and keep it up to date
- I install all updates recommended for my devices
- I have updated the privacy settings on my online accounts within the last year
- I can recognize secure and insecure websites
- I do not post any information that may reveal my address or current location
- I am confident that I can recognize a phishing email
- I never share my passwords with others
- I always create strong passwords
- I use different passwords on all my accounts
- I use two factor authentication on most accounts which allow for it
- I change my passwords regularly (at least twice a year)

■ Female ■ Male ■ Total

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5

Method diagram

Personality
Knowledge
Contextual Factors
Prior experience
Feeling Safe/ Online Anxiety
Cyber-Hygiene
Browsing Habits
Password Management
Privacy Settings
Software/ Hardware Maintenance

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